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SOVIET NONFERROUS METALLURGY

NO. 15

SELECTED TRANSLATIONS

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Introduction

This is a serial publication containing selected translations on nonferrous metallurgy in the Soviet Union. This report consists of translations on subjects listed in the table of contents below.

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a. Frontier Territory (Concerning Dzhezkazgan Copper)

[Following is the translation of an article by V. Nikonov entitled "Perednyy Kray" (English version above) in Partiynaya Zhizn' Kazakhstana (Party Activities in Kazakhstan), No. 12, 1959, Moscow, pages 31-36.]

Five years will pass - and the country will receive Dzhezkazgan's copper. The plant which will be established in the second year of the Seven-Year Plan [1960] will begin to smelt metal as of 1964.

The country has already long been receiving Dzhezkazgan copper in ore and in concentrates. In these forms a continuous flow of this copper is being received by the Balkhash and Karsakpay plants and by the metallurgical enterprises of the Urals. Essentially, however, the development of this largest Soviet deposit has barely begun. Now it is being furthered at a forced pace pursuant to the goals of the Seven-Year Plan. New mines are being built. The miners of the Zlatoust-Belovskiy Open-Strip Pit are baring ore deposits over an immense area. The most modern equipment is being installed at the existing local concentrator plant; that plant itself is being modernized and expanded. Not far away rise the walls of a new concentrator plant designed for processing millions of tons of ore.

This is the Greater Dzhezkazgan, the huge enterprise of nonferrous metallurgy being erected in the Kazakh steppe.

Through Dzhezkazgan, as through hundreds of other huge industrial centers, passes the forward edge of the industrial front of the seven-year period. The tasks facing the workers of the young city and its Party organization are unusually complex and responsible. The solving of these tasks was the fundamental and major subject of discussion at the local Party Conference.

Outpost of the Seven-Year Plan

The Conference was convened at the beginning of 1959. On submitting the Summary Report, the First Secretary of the Municipal Party Committee Comrade Zakirov stated with satisfaction that miners, concentrator-plant workers and builders had worked skillfully during the first year of the Seven-Year Plan. The Dzhezkazgan Mining and Metallurgical Combine and the "Kazmed'stroy" Kazakhstan Copper Construction Trust had suitably coped with the plans for the first 10 months of 1959.

The "Pokro" Mine, whose managerial cadres were complemented by good production organizers, became one of the pace-setters instead of one of the laggards. As in previous years, the primacy in the socialist labor competition among the miners was won by the crew of Mine No. 51, which pledged itself to fulfill its seven-year tasks within five and one-half years. Tens of thousands of tons of ore in excess of the plan were extracted at that mine during the first 10 months of the Seven-Year Plan. Joyful news was also furnished by the concentrator-plant workers. This year they began finally to fulfill their tasks as to the recovery of copper from ore and they eliminated the losses of the metal in excess of the plan.

The creative labor of people inspired by the resolutions of the 21st Party Congress is unlocking the natural riches in the Earth's bowels. The indexes of increase cited in the Secretary's Report bore a convincing testimony to the achieved results. Compared with the preceding year, ore extraction had increased by 7.2 percent, ore beneficiation -- by 8.6 percent, and issuance of copper in concentrate -- by 7.1 percent. All this signifies that the miners and concentrator-plant workers are boldly advancing toward the outposts of the frontline of the seven-year period.

However, the announcements by the delegates at the Conference lacked satisfaction and contentment. On the contrary, in fact, most of them displayed alarm and anxiety. The Communists are perfectly aware of how little has yet been done to fulfill the Seven-Year Plan for the Greater Dzhezkazgan, how great are the neglects in the performance of industrial enterprises and in the organization of construction. The fulfillment of the over-all plan of gross output, the materialization of capital investments -- all this is far from enough. And how is the situation regarding the output of the principal products? What is the progress of the construction of the primary, decisive objects? It is precisely these problems that were raised by the lecturer and by the participants in the discussions while analyzing the year's results.

Yes, with regard to its gross output the Combine has implemented its ten-month program. But its delivery of copper in raw material to the Balkhash Metallurgical Plant was several thousand tons short of the goal. The enterprises of the Combine operated unrhythmically and "fed" the Balkhash metallurgists with "starvation rations." As a result of the drastic lagging in open-strip operations, the extraction of ore at the Zlatoust Belovskiy Pit was not started on time.

That pit is a most important new construction object, one of the crucial positions of Greater Dzhezkazgan. It is precisely thence, from the largest open-strip pit in the country that a river of metal-rich ore should begin to flow. But

so far the situation at the pit has not been so good. This was described by the Deputy Secretary of the Party Committee at the Ore Administration Comrade Baymul'din, in his speech at the Conference:

"The heads of the pit had long been attributing all their misfortunes to the shortage of motorized transport. But after heavy-duty vehicles had arrived and it became really possible to expand the stripping of overburden and extraction of ore, it was found that the pit was not ready for a broad expansion of operations. Innumerable shortcomings have arisen. Drilling and blasting operations are lagging. The motorized machines are not being fully utilized. The pit does not cope with its plan. A great responsibility for all this is borne by the heads of the Ore Administration and the Mining and Metallurgical Combine, who are poorly informed about the state of affairs at the Zlatoust-Belovskiy Pit."

The Mine Construction Administration, headed by Comrade Deribizov is operating poorly. It delays the construction of the complex of the largest mines, Nos. 55 and 57, and it underfulfills the plans of mine-development work. The delegate at the Conference, mine tunneler Comrade Semioshko, spoke with great alarm about the delays in the fulfillment of the tasks of the Seven-Year Plan regarding the activation of new capacities:

"As long ago as in 1957 we had sunk the shaft of the fifty-seventh mine. We wanted to develop it by high-speed methods, but we had not succeeded in materializing our intentions. Now that shaft has already been lying idle for over one and one-half years, because of lack of the necessary equipment. The tunnelers are, of course, ashamed that the work which they are conducting under arduous conditions does not yield quick results."

The delegates to the Conference presented a long bill of complaints to the economic managers and Party organization at the "Kazmed'stroy" Trust. That Trust has adopted the vicious practice of dispersing efforts and funds. The results were not long in coming: the ten-month plan was on the whole overfulfilled, but the construction of the principal new objects was impermissibly protracted. The construction and installation operations in the concentrator plants No. 1 and 2 at the Zlatoust-Belovskiy Pit are being conducted at a snail's pace. The plan of construction of industrial objects for the Mining and Metallurgical Combined was only two-thirds fulfilled. The volume of uncompleted construction is growing with every month.

This cannot be ignored. On construction sites every day, every hour, is expensive. It is necessary to deploy forces onto the principal sectors decisive to the development

of Greater Dzhezkazgan.

Criticism Cannot Be Ignored

Lately much has been accomplished in the enterprises and on construction sites of Greater Dzhezkazgan with regard to introducing new equipment and pace-setting techniques. The struggle for technological progress became particularly expanded after the June Plenum of the CC CPSU.

"Our crew responded to the resolutions of the CC Plenum as to a militant program of action and it has energetically commenced the mechanization and automation of production processes," declared the head of the "Pokro" Mine, Comrade Yeshpanov. "The miners mastered the use of new BA-100 drilling machines and rapid-percussion drills. Water drainage was automated. Many labor-consuming operations were mechanized. All this has helped the mine's crew to increase the mine capacity 11 percent above the planned capacity. But the miners well know that the potential has not been completely utilized. The mastering of the use of the newest mechanisms, the modernization of the lifting installation, the replacement of the four-ton skip hoist by a five-ton one, and many other innovations will enable us in 1960 to raise the capacity of the mine 24 percent above the planned, and in subsequent years -- 30-35 percent."

The experience gained in the struggle for technological progress was also described by other delegates. But what has been done is only the beginning. In the majority of the enterprises and construction sites of Dzhezkazgan the directives of the June Plenum of the CC CPSU concerning the mechanization and automation of production are still being very feebly implemented. The conversion of the ore mines to a new technology of ore extraction based on highly-productive self-propelled equipment has been delayed. That equipment, received nearly a year ago, is being poorly utilized. The automated water drainage installations and ventilating facilities in the mines lie idle. The "Kazmed'stroy" Trust is only very slowly adopting the industrialized methods of construction. The State's goal as to large-panel construction remains unfulfilled. Many labor-consuming operations in which mechanization could be applied successfully are still dominated by manual labor.

The work on the introduction of new equipment and pace-setting techniques, like any other major project, requires a steadfast and rigorous surveillance by the Party. The delegates noted that such a surveillance still has not been established. The Party committees at the Ore Administration and the "Kazmed'stroy" and the Municipal Party Committee often

exclude from their field of vision essential problems of technological progress.

Much was said at the Conference about the considerable shortcomings in the activities of the economic organizations, about the lagging of the organizational-technical management of enterprises and construction sites behind new, ripened problems. It was noted in particular that the heads of the Mining and Metallurgical Combine, Comrades Gurba and Matyushin, do not remain in constant and close contact with the enterprises.

"The heads of the Combine are only slightly familiar with the needs of the mines," declared the Director of the Ore Administration Comrade Bupezhanov. "More than a year has passed since the Ore Administration was incorporated into the Combine, but throughout that time the Main Engineer Comrade Matyushin did not visit even one mine. We always fail in our attempts to make the Deputy Director of the Combine Comrade Aleksandrov visit us and examine many pressing matters on the spot. We receive many orders and ordinances, but no actual, practical assistance from the heads of the Combine."

A large volume of operations on the construction sites of Dzhezkazgan is being conducted by subsidiary organizations under the jurisdiction of the Ministry of Construction Kazakh SSR. Many of these organizations fail to cope with their tasks, and retard the activation of important objects. The delegates addressed major claims to the Ministry. It does not efficiently guide the local boards of the Kazsantekhmontazh, Kazelektromontazh, and other Kazakh republic construction and installation organizations, and it cares little about reinforcing their material base and preparing for the fulfillment of the heavy 1960 schedule.

The criticism addressed to the Karagandinskiy Sovnarkhoz was sharp. The delegates stated that it delays its decisions on important problems relating to the construction of Greater Dzhezkazgan, and does not efficiently organize the material and technical supplying of the enterprises and construction sites.

"The impression arises," declared the head of the "Kazmed'stroy" Trust Comrade Voronov, "that the Sovnarkhoz is separated from Dzhezkazgan by an entire continent. And yet its purpose is to effect a rapprochement between management and enterprises and construction sites. Instead of making more frequent on-the-spot visits, studying the state of affairs, and taking operative measures, the comrades from the Sovnarkhoz have hitherto preferred to call workers from Dzhezkazgan to their offices. I have been working for ten months in Dzhezkazgan and during that period I had to travel to Karaganda not less than twelve times for every kind of

conference. The management of construction organizations beats a superficial character. The supplying of the Sovnarkhoz's construction sites is managed by incompetent persons, hardly familiar with the duties entrusted to them. Numerous requests addressed to them remain unanswered."

The Sovnarkhoz was sharply criticized by Comrades Shinturinov, Larionov, and other delegates.

The Conference was attended by the Deputy Chairman of the Karagandinskiy Sovnarkhoz Comrade Zubarev. He was given the mandate of a delegate, and he was not reminded of the rules when he took the pulpit at the end of the discussions. But his speech was somehow strange. It was "procedural" in character, containing many well-known truths. How then did Comrade Zubarev reply to the criticism addressed toward the Sovnarkhoz, to the problems raised by the delegates? Not at all! He just waved them off, as simple as that. He did not as much as mention the critical remarks -- as if they had never been made.

The representative of the Sovnarkhoz decided to make no comment. This cannot be regarded otherwise than as a egocentric attitude toward the critical speeches of the Conference delegates.

Features of the Style

"Why did the Report not describe the activities of the apparatus of the Municipal Party Committee?"

This question was asked of the lecturer. Comrade Zakirov replied:

"These activities were not described, because no changes in them had occurred since last year's Party Conference. At the last year's Conference I stated that the Municipal Committee works without Sections."

This was, of course, an unconvincing answer. The delegate who asked the question obviously wanted to find out about the positive and negative aspects of the activities of the Municipal Committee and its apparatus and about the shifts that had occurred not in form nor in structure but in essence during the report period.

This question did not arise fortuitously. The Secretary's Report had shed too little and too superficial light on the extensive, many-faceted activities of the Municipal Party Committee. Herewith is the text of the Report's small section concerned with the Municipal Committee: "Eighteen sessions of the Bureau, six plenums of the Municipal Committee and four meetings of the Party activists discussed 86 problems directly relating to the industrial activities of the city, to the mass-political and intra-party activities of the Party organi-

zation. At the sessions of the Bureau the problems of the performance of the "Kazmed'stroy" Trust, the Mining and Metallurgical Combine, and other economic organizations, were discussed 21 times. Problems of commerce, the life of the workers, and political-educational work, were constantly a subject of discussion at the Bureau."

But, after all, the activities of the Party Committee cannot be reduced solely to the discussion of certain given problems. The Secretary's Report should describe reasonably how the Municipal Committee has been conducting its organizational work, what measures have yielded good results and what ones have not been completed, and what were the concrete reasons for omissions and shortcomings. Unfortunately, the Report made no attempt to analyze in depth the activities of the Municipal Committee. So it is quite natural that the delegates participating in the discussions had supplemented the Report, and made critical remarks about the style and methods of activitiy of the Municipal Committee.

Now this is what was said by a member of the Municipal Committee, the Secretary of the Party Organization at the Multilateral Geologic-Prospecting Expedition, Comrade Avdeyev:

"At the plenary session of the Municipal Committee which discussed the draft of the Secretary's Report, a member had expressed the wish that the Report include criticism addressed to the individual Committee members and the Bureau. Regrettably, this wish was not considered in the Report. It would be indicated, e. g., to mention the incorrect methods of work of the Secretary of the Committee, Comrade Levina. She constantly resorts to shouts, threats, intimidation. She adopts a condescending tone when talking with the secretaries of the local Party organizations....It is also necessary to mention that the Bureau did little to utilize the services of the Committee members. Many of them received no concrete assignments, were alienated from the day-by-day activities of the Municipal Party Committee."

Critical remarks were made at the Conference by the Secretary of the Municipal Party Committee's Komsomol, Comrade Malykh:

"I was first elected a member of the Bureau of the Municipal Party Committee, and my experience is limited. All the same, it seems to me that the Bureau has not always been organizing its activities properly. Our daily agenda has as a rule been excessively heavy. So many decisions were adopted that it was very difficult to establish effective control of their implementation. In my opinion, many of the problems which we had long been examining, on interviewing people in our office, could have been easily resolved on the spot. The Municipal Committee should radically improve the organization-

al work in the field in the local Party organizations."

That the Municipal Committee should more successfully assist the local Party organizations and more strictly supervise the activities of the economic managers, was asserted at the Conference by Comrade, Shinturinov, the Secretary of the Party committee at the "Kazmed'stroy". A great omission by the Municipal Party Committee consists in that it does not verify the implementation of its decisions and does not strive for the materialization of the intended measures. Comrade Shinturinov criticized the secretaries of the Municipal Committee, Comrades Zakirov, Kushekov and Levina, for visiting construction sites so rarely, for socializing with the builders so little.

The conclusion about all these critical remarks is the following one: it is necessary to improve the methods of Party management. The main thing is lively organization field work.

Constant Attention to the Needs and Requests of the People

The City of Dzhezkazgan is only five years old. How rapidly it is growing and gaining in beauty and welfare! Entire blocks of new residential buildings are being opened for occupancy. The number of stores and canteens, schools and creches, hospitals and communal enterprises, is growing not only with every year but also with every month. The Dzhezkazganians are proud of their houses of culture, of their TV station -- the fourth in the republic. The needs and requests of the people creating Greater Dzhezkazgan are being satisfied to an ever better and more complete extent.

But the needs are growing. And the city is still under construction, the number of its inhabitants is rising very rapidly, and so it is inevitable that difficulties arise in the servicing of the needs of the population. However, this is not a question of difficulties alone. The delegates to the Party Conference stated that certain economic, Party and Soviet managers neglect their great responsibility for satisfying the material and cultural needs of the workers.

The miners and concentrator-plant workers would have been allocated many more new apartments last year had the "Kazmed'stroy" fulfilled its plan for readying for occupancy new housing for the Mining and Metallurgical Combine. The stores and canteens would have operated better had the Executive Committee of the Municipal Council of Workers' Deputies been properly concerned with the organization of commerce and public feeding. There is no justification for the fact that the stores often lack the most staple goods in daily demand

and the canteens prepare tasteless, expensive food from good produce.

Many of the hostels for young workers are poorly managed. In the hostels of the Mining and Metallurgical Combine the servicing of tenants has lately deteriorated instead of improving. The Deputy Director of the Combine Comrade Aymyshev believes that this is a normal thing. At the Conference he was sharply criticized. The delegates said that Comrade Aymyshev, who is in charge of the workers' welfare at the Combine, displays an irresponsible attitude. The Municipal Party Committee displays a too friendly attitude to that Communist leader, who ignores the naterial needs of the people.

Several of the delegates mentioned the irregularities in the work of the Motor Depot No. 3, concerned with passenger transport. Bus traffic in the city is very poorly organized. The head of the motor depot, Comrade Kostyuchenko, does his work in a bureaucratic manner. And yet that motor depot is considered to be one of the best at the Republic Ministry of Motor Transport, and Kostyuchenko receives bonuses.

The Conference has uncovered major shortcomings in mass-political and cultural-educational work. The voice of Party agitators is not heard at the Mine No. 55, the Foundry and Machine Plant, and many sectors of the "Kazmed'stroy" Trust. Many clubs and libraries have not yet become genuine centers of culture. Atheist propaganda is not extended to broad strata of the population; this is utilized by obscurantists-cultists to intensify their harmful activities.

The Municipal Party Committee lately has clearly been paying less attention to the satisfaction of the cultural needs of workers. A great responsibility for this is borne by the Committee's Secretary Comrade Levina, who is in charge of ideological work. The delegates stated that she is coping poorly with the duty entrusted to her.

Comrade Levina became re-elected to the Municipal Party Committee, but she was not re-elected its secretary.

* * *

The second year of the Seven-Year Plan in Dzhezkazgan will be marked by an unprecedented expansion of construction and substantial increase in industrial output. It is necessary to elevate the people to ever greater tasks, to raise the level of the Party's management of all sectors of economy and public and cultural life. The Resolution adopted by the Conference clearly defines the tasks to be solved by the Municipal Party Organization.

b. We Are Adopting New Practices and Advanced Technology

[Following is the translation of an article by M. Kas'yan entitled "Vnedryayem Novuyu Tekhniku, Peredovuyu Tekhnologiyu" (English version above) in Partiynaya Zhizn' Kazakhstana (Party Activities in Kazakhstan), No. 12, 1959, Moscow, pages 51-53.]

This year the crew of the Balkhash Mining and Metallurgical Combine exceeded 2.7 times the planned capacity of the enterprise for the production of basic output. This was achieved without activating additional output capacities and without any large capital investments. Our achievements are a result of the sacrificial labors of the workers, engineers and technicians of the Combine, struggling to convert into life the resolutions of the 21st Party Congress and the June Plenum of the CC CPSU, a result of an improvement in the organizatory and political work of the local Party organizations.

The paramount attention of the Communists, of the entire crew of the Combine is at present oriented toward utilizing the same production space to obtain an ever-increasing volume of output while at the same time cutting production costs, improving production quality, and facilitating the working conditions. For this purpose it is necessary continually to improve the technology of production, perfect equipment and mechanisms, introduce automation, and utilize more broadly the labor-saving suggestions of workers, engineers and technicians.

For a long time the crusher shop has been a bottleneck in the processing of ore. Why did this happen? How to correct the situation? These questions were seriously tackled by the shop's Party organization and its secretary, Comrade Shakhalov. First of all, the automation of the guidance of equipment was undertaken. While previously the start-up of the crushers, feeders and conveyers required a long time, at present this operation is executed centrally, from a single control panel, within a very brief time. The conveyer drives and many other equipment units were modernized, a number of labor-consuming and arduous operations were mechanized, and the conveyers were perfected. Now not men but automatic devices care for a proper travel of the conveyer belts, clean them, and prevent their rupture. All this has made it possible to relieve a large number of workers for other sectors of the enterprise. Compared with 1953 the number of the

shop's workers has been nearly halved. Working conditions have improved substantially. Now the shop operates rhythmically and reliably. Considerable credit for this belongs to Technician-Party Member I. Grevizirskiy, Senior Electrician B. Sheremet'yev, Fitter-Party Member S. Knyshev, and Assembler A. Shtro, who are devoting a great deal of effort to introducing the newest and pace-setting innovations. At present a team of workers and technicians under the direction of B. Sheremet'yev is working on a project for the further automation of equipment.

The entire activity of the Party organization at the Concentrator Plant (Secretary: O. Molchanov) is closely tied to the production operations of the Plant's crew. Here also the Party organization has actively participated in introducing many innovations: the feeding of grinding mills with ore and the regulation of the density of overflow from classifiers were automated, and the barrels of the grinding mills are being elongated. In this connection, the elongation of barrels suggested by M. Gorodetskiy, G. Kepp, A. Azbel, I. Kharchev, and others, made it possible to increase the volume of ore processing by 10 percent, which is tantamount to the activation of a new concentrator plant. In addition, automation was extended to the process of the burning of fuel and to other processes in the filtering and drying departments. As a result, the unit consumption of fuel decreased greatly, working conditions improved, and 12 workers were relieved. The Plant's obsolete flotation machines and other equipment are being gradually replaced.

The Party members and the whole crew of the Molybdenum Plant are waging a persistent struggle for improving production. Lately, a perfected scheme of ore processing has been introduced at that Plant to increase the recovery of molybdenum. Success was achieved in recovering molybdenum and other rare metals from the liquid wastes in which these metals had previously been irretrievably lost. Both these innovations were first developed and mastered on an industrial scale in the Soviet Union at our Combine. Here much credit belongs to the engineers V. Apollonov, Ye. Grevizirskaya, A. Rodziyevskiy, and others.

Under our production conditions, many parts of pumps, flotation machines, etc., require frequent replacement, because they wear out rapidly in an acid-saturated medium. Now we have begun to use broadly rubberized parts coated with a layer of rubber. They are more acid-resistant and long-lived. Their use will make it possible to save approximately one and one-half thousand tons of ferrous metals annually.

The workers of the experimental shop under the direction of Comrades Revazashvili and Korotchenko have mastered

the pilot production of cast parts of stone. Specimens of these parts proved to be very wear-resistant and unsusceptible to the adverse effect of the acid medium. The introduction of precision casting dispenses with the need for the machining of parts, and the related costs are much lower than the costs of the analogous parts of metal.

The Metallurgical Shop has introduced a new method of charge blending, which made it possible to increase the smelting rate of charge by 20-25 percent; centralized guidance of equipment is being introduced at the charge-blending department and at the dust [-collection] plant.

The technological processes at the Nonferrous Metals Treatment Plant, the Kounrad Ore Mine, and other enterprises and shops of the Combine, are being perfected.

At our Combine inventions and labor-saving suggestions are broadly encouraged. The first nine months of this year alone had witnessed the introduction of 1,775 valuable suggestions which had served to save over nine million rubles. All this, of course, did not just drop into the lap but required considerable labor of the collective and of the economic, Party, Komsomol, and trade-union organizations.

How are we organizing the introduction of innovations and pace-setting techniques? First of all, every suggested innovation is thoroughly investigated and discussed jointly with economic managers and trade-union organizations. If the innovation satisfied the requirements, promotes technological progress, it is automatically adopted and carried out. Twice a week, in lieu of the previous dispatcher discussions, we check on the spot the introduction of innovatory suggestions in every shop successively. Such inspections have positively affected the production operations. The heads of the Combine's shops and enterprises and the local Party organizations have begun to pay more attention to a timely introduction of pace-setting technology, new equipment, automation, and labor-saving suggestions.

Initially, certain economic managers reacted skeptically to this change-over. How, they asked, is it possible to get along without dispatcher conferences at which production matters are discussed. Now they have become convinced that the level of the management of production has not declined but, conversely, the constant control of the introduction of innovatory suggestions has begun to promote an improvement in the production process.

At present all the local Party organizations at the Combine, which total fifteen in number, have focused their attention on the introduction of new technology. This was promoted by the Resolution of the June Plenum of the CC CPSU Concerning the Establishment of Party Control Commissions. Guiding our-

selves by that Resolution we have established nine Party control commissions under the Party Committee and the shop Party organizations. The active participation of these commissions in the life of the Combine will be of great benefit.

The Combine's Party organizations have accomplished much in explaining the resolutions of the 21st Party Congress and the June Plenum of the CC CPSU. These documents were discussed at Party and workers' meetings, and measures for introducing new technology were developed in every shop. The problems of technological progress are discussed broadly in all the 45 bulletin-board newspapers at the Combine. Particularly successful propaganda for the introduction of new technology and innovatory suggestions is being waged by the bulletin-board newspapers "For Copper," "The Crusher," "For New Technology," and "The Power Engineer." Recently two new such wall newspapers began to be published at the Combine: "Technical Bulletin" and "Bulletin of the Work-Saver."

In the Technology Room of our House of Culture we have organized a permanent exhibit of latest advances in technology and the best labor-saving and innovatory suggestions. The new technology, the prospects for the development of the Combine are described in the periodical "Khochu vse znat'" [I Want To Know Everything].

Considerable attention is devoted to the technical training of workers, engineers and technicians. Last year 800 persons were graduated by the local school of pace-setting working methods. Moreover, 592 persons were attending various courses, and altogether for the year as a whole about three and one-half thousand workers had improved their working qualifications. The Combine's specialists regularly visit the shops and give lectures concerned with the introduction of new equipment and improvement of production technology. Trips by our people to related enterprises are greatly conducive to a widening of the field of vision, enrichment of knowledge. Our co-workers have sojourned to the metallurgical plants of the Ukraine, Urals, the Ust'-Kamenogorsk Combine, and the metallurgical enterprises of China and Bulgaria as well.

It must be admitted that not all of the local Party organizations at the Combine display as yet the proper persistence in the struggle for introducing measures purporting to improve production.

The surmounting by the Party of certain obstacles on the path of technological progress requires the assistance of the republic organizations. At our Combine, e. g., many devices and means of automation and electrical materials are needed. The lack of certain objects is delaying design work. Certain scientific-research institutes of the Academy of Sciences of Kazakhstan are working too slowly on the develop-

ment of the principal problems of the improvement of technology, comprehensive utilization of raw materials, designing of new and more productive equipment, improvement of working conditions in concentrator and metallurgical shops. These institutes should also furnish us with assistance in the utilization of oxygen in metallurgical production. We cannot as yet solve this problem with our own resources.

A commission of the Karagandinskiy Sovnarkhoz has, jointly with representatives of the State Committee of the Council of Ministers USSR on Automation and Machine Building, drafted a project for converting our Combine into a pilot showcase enterprise. This is technically expedient and economically justified. The Combine's crew hope that this recommendation of the Karagandinskiy Sovnarkhoz will be supported.

c. Analysis of the Status and Efficiency of Comprehensive Utilization of Lead-Zinc Raw Material

[Following is the translation of an article by L. A. Nezhinskaya and I. M. Gratsershteyn entitled "Analiz Sostoyaniya i Effektivnosti Kompleksnogo Ispol'zovaniya Svintsovo-Tsinkovogo Syr'ya" (English version above) in Izvestiya Vysshikh Uchebnykh Zavedeniy. Tsvetnaya Metallurgiya (News of Higher Schools. Nonferrous Metallurgy), No. 5, 1959, Moscow, pages 167-172.]

The target figures of the development of the national economy of the USSR for 1959-1965 provide for a substantial increase in the output of nonferrous and, especially, rare metals. The omnilateral intensification of the comprehensive utilization of ore raw materials is of great importance in assuring a rapid pace of development of the nonferrous metallurgy of the Soviet Union, in increasing the output of nonferrous and rare metals, and in improving the economic effectiveness of metallurgical and concentrator plants.

At present a large amount of valuable components is being lost in the process of the beneficiation and metallurgical reduction of ore. For instance, not more than 15-20 percent of the sulfur contained in polymetal ores is being utilized. A particularly large amount of sulfur is forfeited in the tailings of concentrator plants and gases of lead plants.

The bulk of the forfeited raw-material components is lost in the process of ore beneficiation. Thus, according to 1957 data, the losses in the process of beneficiation amount to 56.4 percent for lead, 72 percent for zinc, 57.4 percent for copper, 80.5 percent for gold, and 60.1 percent for silver -- in terms of percent of the total losses of these metals in the course of the processing [beneficiation and metallurgical reduction] of Leninogorsk ores. The percentage of losses of the rare-element constitutents in the concentration tailings is still higher.

It should be noted that studies of the distribution of dispersed elements among the products of ore concentration revealed considerable variations in the individual concentrator plants and years -- variations that do not always correspond to the geochemical similarity between these products and the principal minerals. This attests to the possibility of influencing the behavior of dispersed elements in the process of beneficiation and recovering them into specific products.

The level of utilization of a multi-component raw material can be judged from the ratio of the value of the components recovered into marketable output to the value of the irretrievably lost components.

A study of the degree of utilization of ore raw materials in 1957 had shown that the value of the components irretrievably lost in the process of ore beneficiation at the Mizur Concentrator Plant amounted to 123 percent, and at the Leninogorsk Concentrator Plant -- 111 percent of the value of marketable output.

The dynamics of the losses of components, used to conduct operative accounting at the above-named concentrator plants (Fig. 1), shows that the losses of the principal components (lead, zinc and copper) generally are declining, although not quite uniformly. Thus, at the Leninogorsk Plant, in 1957, compared with 1950, the loss of zinc declined by five percent, of lead -- by six percent, and of copper -- by 22 percent. As for the Mizur Plant, the level of metal losses in its Sadon City branch during the period in question had remained nearly unchanged, while at its Buron City branch, activated in 1955, the level of zinc losses had increased by 10 percent in three years (1955-1957) but at the same time the losses of lead and copper had declined considerably -- by eight and 15.5 percent, respectively.

The losses of the side-recovered metals have nearly not declined at all, and during certain period they have even been rising. Thus, the losses of gold at the Leninogorsk Plant in 1957 increased by six percent compared with 1950, as a result of the decline in the gold content of the ore. However, as shown by an analysis, the decline of the content of principal metals in ore does not preclude the possibility of increasing their recovery.

During the concentration of these polymetal ores more than one-half of their sulfur content and nearly their entire content of rare metals is lost.

The losses of useful components during metallurgical processing are much lower than during concentration (beneficiation), which is to be explained not only by the presence of higher indexes of recovery of principal metals (lead, zinc) but also by the fact that the greater part of rare and dispersed elements is eliminated prior to metallurgical processing.

In the metallurgical plants processing the concentrates of the above-named concentrator plants the ratio of the value of metals in marketable output to the value of metals in irretrievably lost wastes varies. In 1957, at the "Elektrotsink" Zinc Electrolysis Plant the value of the irretrievable losses amounted to 49.25 percent in terms of the value of the marketable output, and at the Ust'-Kamenogorsk [Lead-Zinc] Combine -- 32.06 percent. Although the metallurgical

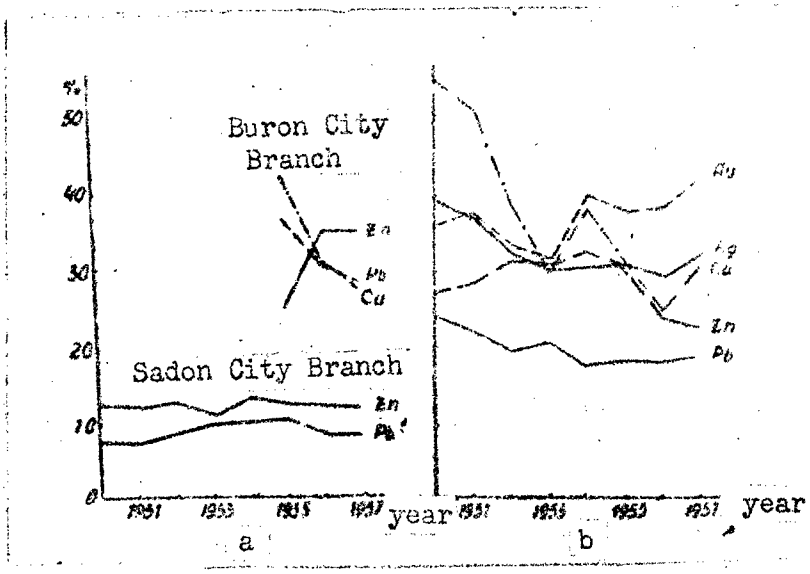

Fig. 1. Losses of Metals at the Mizurskiy (a) and Leninogorsk (b) Concentrator Plants

processing of lead-zinc raw material yields concentrates of rare and dispersed elements, only certain of these elements are as yet being recovered into marketable output in individual enterprises.

The data on the losses of principal metals and sulfur during zinc and lead production are illustrated in Fig. 2.

The introduction of the comprehensive scheme of retreatment of lead-zinc wastes in the beginning of the 1950's has conditioned a sharp decline in the losses of zinc and of lead and cadmium as well. Thus, at the "Elektrotsink" Plant the recovery of zinc had increased by 8.7 percent compared with 1950, as early as in 1953. The losses of zinc in zinc production in 1957, compared with 1950, had declined by 12.9 percent at the "Elektrotsink" Plant, and by 5.2 percent at the Ust'-Kamenogorsk Combine. The losses of lead in lead production in the above-named enterprises had declined by 5.8 and 13.2 percent, respectively, compared with 1952, when the Ust'-Kamenogorsk Combine began to produce lead. At the same time, the losses of lead and zinc in the production of differently-named metals have been increasing: at the "Elektrotsink" Plant the losses of lead in zinc production during five years (1953-1957) have increased by 0.2 percent, and at the Ust'-Kamenogorsk Combine, by 5.3 percent.

The level of the recovery and losses of zinc in lead production is determined by the scale of the retreatment of lead slags, in which accumulates nearly all of the zinc contained in lead concentrates. Thus, the losses of zinc in lead production at the "Elektrotsink" Plant (71 percent in 1950 and 82.5 percent in 1957) stem from the merely partial retreatment of the slags as a result of the shortage of dust-collection facilities. The losses of zinc in lead production at the Ust'-Kamenogorsk Plant had declined to 80 from 100 percent after the activation of a slag-distilling installation (in 1957).

The utilization of the copper contained in lead-zinc concentrates is achieved through cooperation between the lead-zinc and copper industries by means of the retreatment of lead matte, clinker, and chloro-copper cakes in copper-smelting plants.

The temporary weakening of ties between the lead-zinc and copper industries in the Northern Caucasus in 1957, compared with 1950, had caused the losses of copper at the "Elektrotsink" Plant to increase by 12.3 percent in zinc production and by 10.6 percent in lead production. At the Ust'-Kamenogorsk Plant, where the ties with the copper industry were more regular, the losses of copper during the same period had declined by four percent in zinc production and by as much as 36.7 percent in lead production.

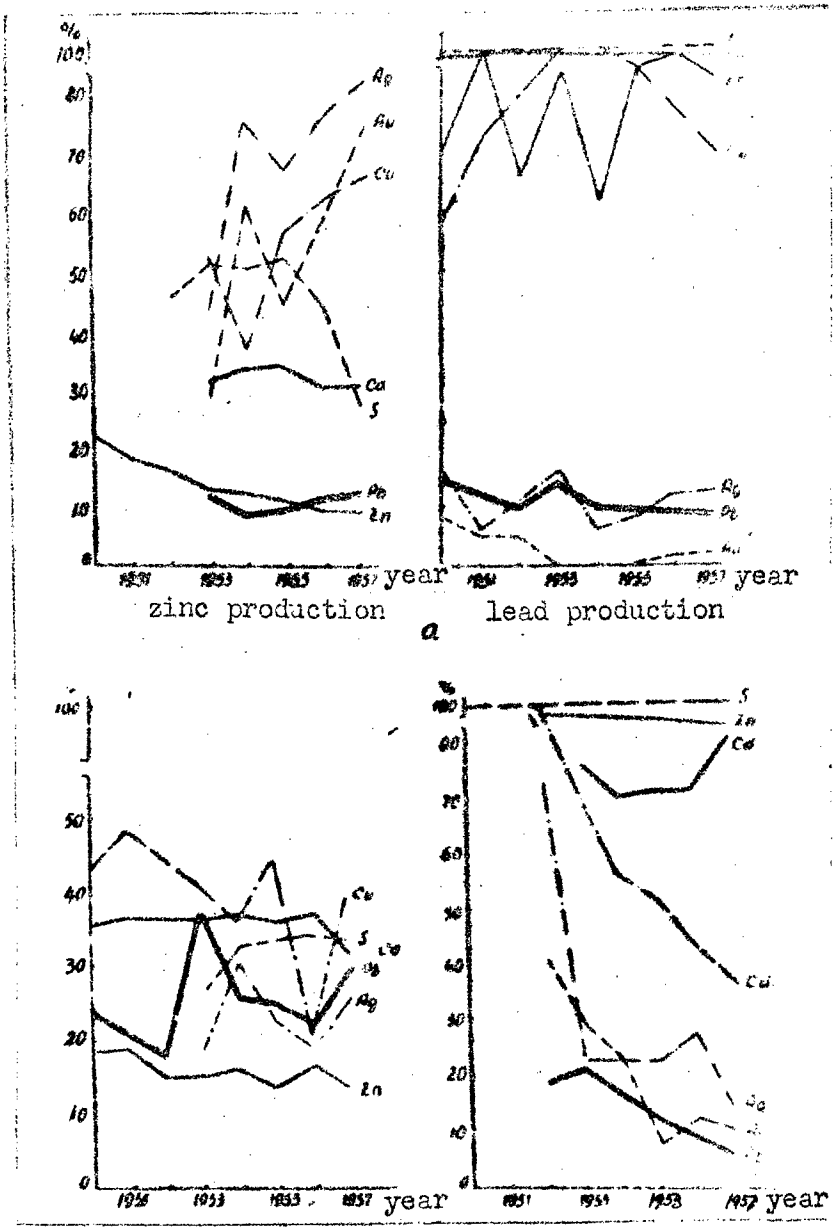

Fig. 2. Losses of Metals and Sulfur at the "Elektrotsink" Plant (a) and Ust'-Kamenogorsk Combine (b)

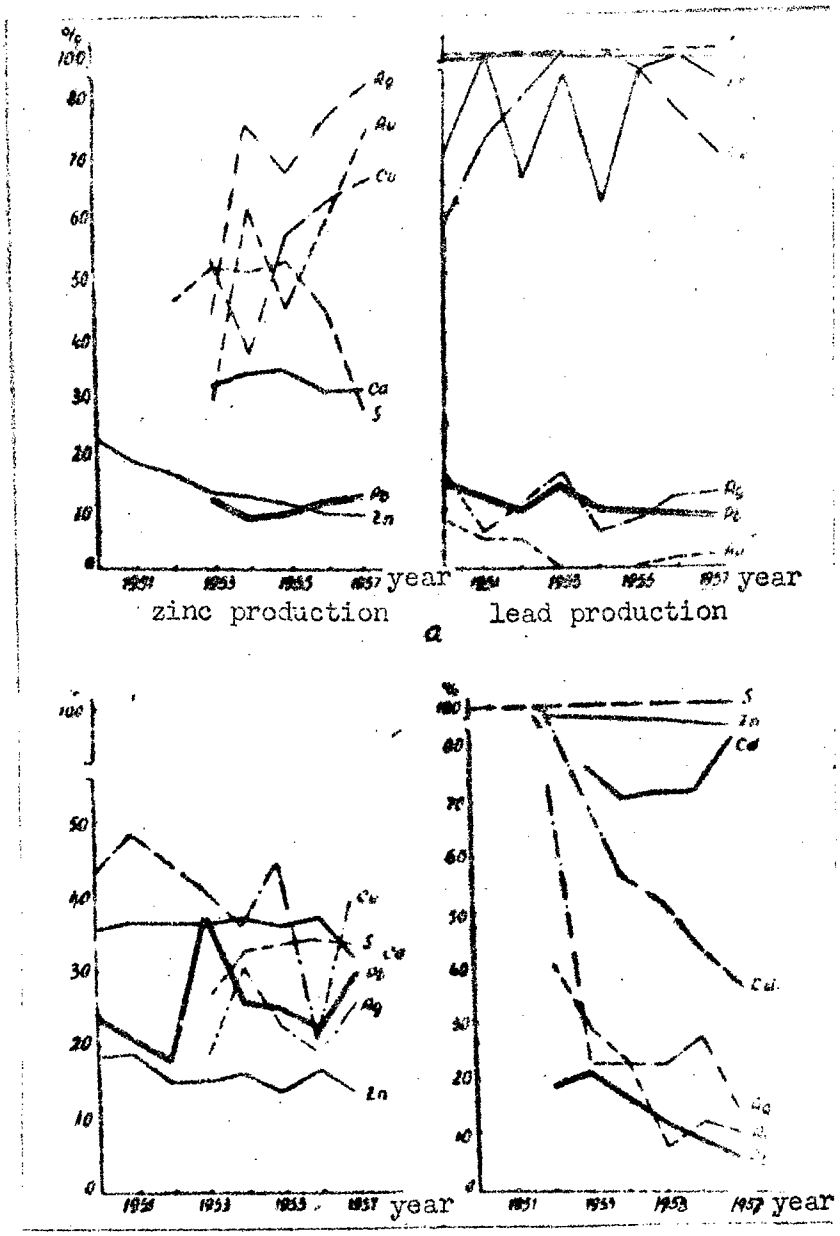

Fig. 2. Losses of Metals and Sulfur at the "Elektrotsink" Plant (a) and Ust'-Kamenogorsk Combine (b)

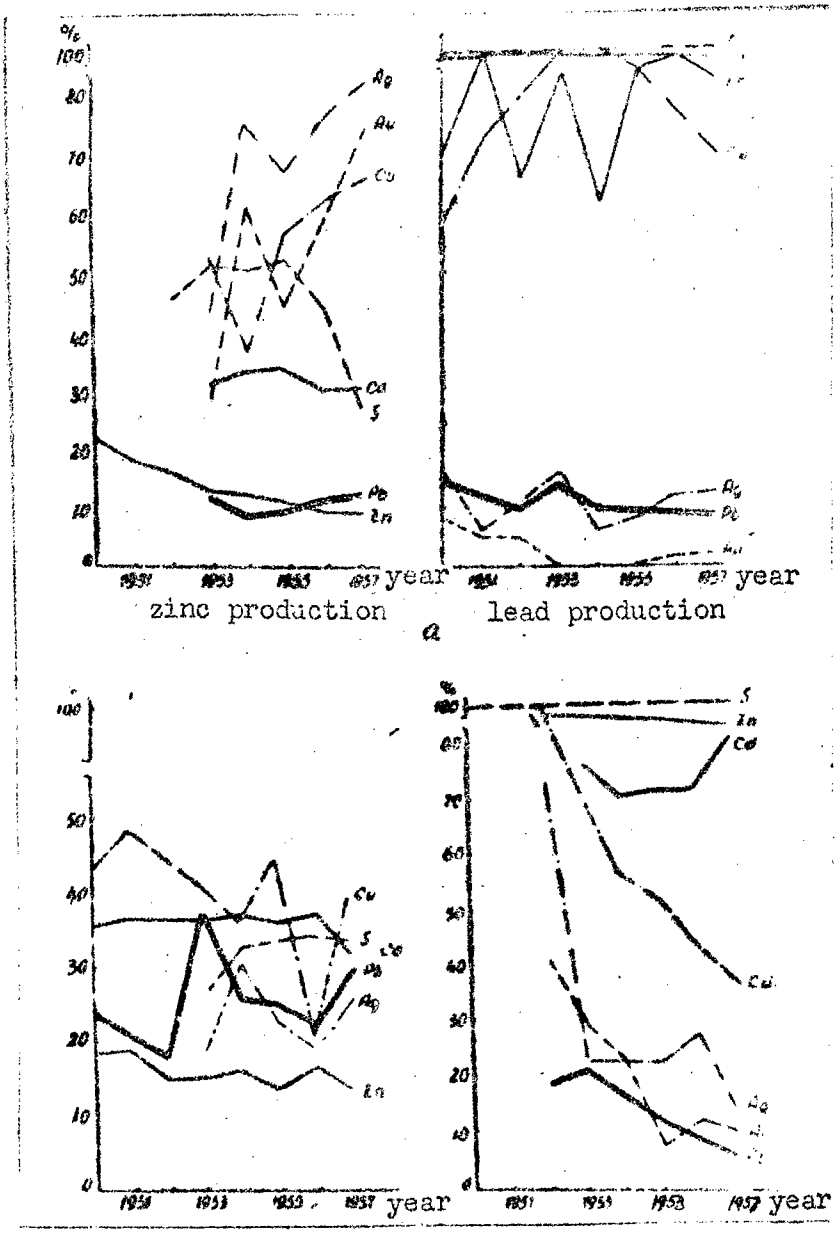

Fig. 2. Losses of Metals and Sulfur at the "Elektrotsink" Plant (a) and Ust'-Kamenogorsk Combine (b)

The losses of precious metals contained in the lead raw material of both enterprises are insignificant and during the period in question they had remained nearly unchanged (except for the starting period); however, the losses of gold and silver in zinc production had increased during the 1950-1957 period by 45 and 38 percent, respectively, at the "Elektrotsink" Plant, and by 4.5 and 13.7 percent, respectively, at the Ust'-Kamenogorsk Combine.

The improvement in the utilization of the sulfur contained in zinc raw material is related to the introduction of the fluidized-bed roasting of zinc concentrates. As for the sulfur contained in lead raw material, it is completely forfeited.

The losses of cadmium in zinc production have remained unchanged; as for the cadmium contained in lead raw material, nearly all of it is lost irretrievably. The cadmium of zinc raw material circulates between the zinc and lead production departments of the "Elektrotsink" Plant. As for the lead dusts at the Ust'-Kamenogorsk Combine, since 1956-1957 they have been retreated in the lead production shop (without recovering cadmium from them) as a result of the insufficient capacity of the oxide leaching shop.

Thus, this analysis of the utilization of ore raw materials in two polymetal enterprises of the Soviet Union has shown that despite a certain improvement in their performance their achieved level of comprehensive utilization of raw materials cannot be regarded as satisfactory.

Our study has revealed that even under the existing conditions of an inadequate level of comprehensiveness of utilization of the polymetal raw material, the realized measures have proved to be highly effective, as expressed in the increase in the output of principal products (Lead, zinc, cadmium) and the recovery of a number of rare and dispersed elements and the increase in labor productivity, and decline in production costs and unit capital expenditures.

The over-all rise in the output of principal metals at the Ust'-Kamenogorsk Combine and the "Elektrotsink" Plant stems not only from an improved utilization of output capacities and perfection of technology and modernization of equipment but also from the use of a comprehensive scheme of raw material processing.

Thus, in eight years (from 1950 to 1957) the output of zinc at the "Elektrotsink" Plant had increased 3.6 times, with 28-30 percent of the total quantity of zinc obtained as a result of the comprehensive retreatment of lead-zinc wastes in intermediate shops, and the share of the lead and cadmium recovered through the comprehensive cycle had amounted to 18-20 and 20-30 percent, respectively, of their total output.

At the Ust'-Kamenogorsk Combine during the same period the output of zinc had quadrupled, and the share of the zinc obtained through the comprehensive cycle amounted to 11-21 percent, and of lead and cadmium -- 6-9 and 20-30 percent, respectively.

It is clear from the above-cited data that the comprehensive recovery of principal components at the "Elektrotsink" Plant has been higher than at the Ust'-Kamenogorsk Combine. This has also stimulated a higher percentile recovery of metals. Thus, at the "Elektrotsink" Plant in 1957 the recovery of zinc amounted to 90.63 percent, and at the Ust'-Kamenogorsk Combine -- 86.9 percent.

However, the economic effectiveness of the comprehensive utilization of raw materials is determined by the increase in the output of not only the principal metals but also all secondary components.

While the total marketable output at the "Elektrotsink" Plant had increased 2.7 times during 1950-1957, the share of the comprehensive, output amounted to 32.5 percent in 1950 and 28.5 percent in 1957. At the Ust'-Kamenogorsk Combine marketable output had increased 11.2 times during the same eight years, but the share of the comprehensive output had dropped from 25.5 percent in 1951 to 21.6 percent in 1957.

The decline in the share of comprehensive production is to be explained by the increase in the disproportions between the output capacities of the principal-metal and comprehensive cycles; while the capacities of principal-metal production had been continually increasing, the capacities of the comprehensive production had essentially remained unchanged.

The effectiveness of the comprehensive utilization of raw materials manifests itself in an increase in labor productivity, decline in production costs, and rise in the profits from the realization of marketable output.

For instance, while during the period in question (1950-1957) over-all labor productivity had increased 1.7 times at the "Elektrotsink" Plant and threefold at the Ust'-Kamenogorsk Combine, the increase stemming from the comprehensive utilization of raw materials had accounted for from eight to 28 percent of the above-mentioned over-all increase, in individual years.

A consistent decline in production costs is to be observed at the "Elektrotsink" Plant.

At the Ust'-Kamenogorsk Lead-Zinc Combine, beginning with 1952, production costs had risen drastically as a result of, mainly, a sizable increase in the expenditures on raw materials (because of low indexes of metal recovery and substantial outlays on the imports of concentrates over large distances). During that period (1952-1955) the actual pro-

duction costs of lead and zinc had exceeded considerably the planned costs -- and the sales prices of these metals as well. However, the Combine continued to operate with a profit (except for 1953). All of the profit was obtained as a result of the realization of the comprehensive production.

The decline in unit capital expenditures is yet another index of effectiveness of the comprehensive utilization of raw materials. Thus, while in 1950-1957 the total unit capital expenditures decreased by 12.3 percent at the "Elektrotsink" Plant and by 37.6 percent at the Ust'-Kamenogorsk Combine, the materialization of the comprehensive scheme of raw material processing alone had accounted for 16 and 7.3 percent, respectively, in that decrease.

The foregoing analysis of the status and effectiveness of the comprehensive utilization of polymetal raw materials makes it possible to deduce the following conclusions.

Even when a merely partial scheme of comprehensive utilization of the lead-zinc raw material is employed, in the presence of substantial losses of principal metals (lead and zinc) during the production of differently-named metals, considerable losses of secondary components (copper and precious metals) and sulfur (especially the sulfur contained in lead concentrates), and a nearly total loss of dispersed elements as well, this is still sufficient to demonstrate the enormous advantages and great economic effectiveness of the comprehensive utilization of the lead-zinc raw material, as manifested in the following facts:

(a) Increment in output, compared with non-comprehensive processing, by 19-26 percent (at the Ust'-Kamenogorsk Combine) and 28-32 percent (at the "Elektrotsink" Plant);

(b) Rise in labor productivity during the 1950-1957 period as a result of the comprehensive utilization of raw material, accounting for 9-28 percent (Ust'-Kamenogorsk Combine) and 8-21 percent ("Elektrotsink" Plant) of the overall threefold and 1.7-fold rise, respectively, in labor productivity in these plants;

(c) A 25-percent rise in profitability of enterprises as a result of comprehensive utilization of raw material;

(d) Decrease in unit capital expenditures on comprehensive production by 7.3 percent (Ust'-Kamenogorsk Combine) and 16 percent ("Elektrotsink" Plant) compared with the non-comprehensive scheme.

As a result of the profit yielded by the comprehensive scheme of processing, the period of recoupability of the expended capital investments has shrunk by 26.2 percent at the Ust'-Kamenogorsk Combine and 13.6 percent at the "Elektrotsink" Plant.

END Received 24 March 1959

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